

WESTAT State Analysis Grant Report

Indiana's First Steps Early Intervention System

September 2004

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Introduction

Indiana's First Steps Early Intervention System serves thousands of children and families each year, and has grown dramatically since its inception. Because of the success First Steps has experienced in identifying and finding children and families who are in need of early intervention services, the Bureau of Child Development, Division of Families and Children, Family and Social Services Administration has asked this question:

***What impact is Indiana's First Steps Early Intervention System
having on the children and families it serves?***

Over the past few years, the Bureau of Child Development has contracted with the Early Childhood Center at the Indiana Institute on Disability and Community (IIDC), Indiana University to develop and implement a statewide evaluation system that answers this question. The Bureau of Child Development undertook this task for several reasons. First, a statewide, outcomes-based, evaluation system would enable documentation and communication of the benefits of First Steps to major decision-makers at local and state levels. Second, it would help to expand the focus beyond compliance with the law to include service quality. Third, it would provide information for improving services, particularly in tying training efforts to supporting desired outcomes. Finally, a statewide evaluation system would provide the information needed to continuously plan for the future.

The Early Childhood Center developed an evaluation system that strives to reflect the following features and guiding principles:

- The evaluation system is *statewide* (it touches all children and families receiving First Steps services) and *ongoing* (not a one-shot investigation).
- The focus is on the *outcomes* of First Steps for children, families and communities, not on services or procedures, again, to expand the focus beyond compliance with the law to begin looking at service impact.
- Data collection procedures are *embedded into ongoing service routines* (to minimize, as much as possible, its intrusiveness and time consumption) and are locally implemented by service providers (no independent/outside investigators collecting data).
- Data analyses and findings are *understandable, accessible, and useable* in guiding local and state quality improvement efforts.

A final feature of the evaluation system was to *develop it with considerable input from all major stakeholders* of First Steps: families, providers, local decision makers, and state policy makers. At each step in the development process, from identifying key program outcomes, to piloting various data collection instruments and surveys, to implementing the system statewide, input from program consumers, providers, and decision makers has been, and will continue to be, sought.

The statewide implementation of the First Steps evaluation system began November 1, 2002. The goal of the system is to assess First Step's impact on all children and families exiting First Steps who have been in the system for a minimum of six months. Data collection has focused exclusively on measuring the impact of First Steps on the first six outcomes presented in Table 1.

Table 1
First Steps Outcomes

1. Children attain essential and important developmental skills.
2. Children participate in inclusive community activities, settings, and routines.
3. Children (and families) are safe, healthy, and well nourished.
4. Families participate as members of the early intervention team and carry out recommendations that help them to help their child.
5. Families are connected to other families, associations, and organizations for emotional support.
6. Families advocate by exercising their rights in requesting and choosing goals, services, and supports.
7. Communities are informed and promptly refer families to First Steps.
8. Communities welcome and fully include children with disabilities and their families (e.g., child care, transportation, retail, housing, employment).
9. Communities provide all families access to health care services.

In the fall of 2003, the IIDC presented its initial analysis of the data to the Indiana Governor's Interagency Coordinating Council (part of the November 2003 report). During the presentation, the ICC expressed several policy-related questions that required additional analyses of both the state demographic and IIDC's outcome evaluation data. The two questions strongly voiced by the ICC and the Bureau of Child Development were:

1. What differences exist among children receiving early intervention services based upon their eligibility status (e.g., medical condition, developmental delay, at risk)?
2. What differences exist among children receiving early intervention services based upon their age at entry (e.g., birth to age 1 year, 1 year to 2 years, and 2 years to three years)?

Answering the two questions present important policy implications in monitoring services and insuring equal access to important child and family outcomes. For example, if children across different eligibility groups receive the same kinds (and amounts) of services, with no differences, a policy implication might be to look into how well providers are individualizing services based upon the child and family's unique needs. In addition, if children from specific eligibility groups were less likely to experience certain child and family outcomes, a policy implication may be to

look at interventions being used, and associated professional development efforts to increase the presence of these outcomes across all children. A final implication concerns early identification. If children are identified earlier and are able to receive early intervention services earlier in life, do we see associated positive benefits; and is the case made for increasing child find efforts?

Because of this guidance, and with funding support from WESTAT, evaluators at the IIDC were able to conduct additional analyses of the state's demographic data (age, months of service, eligibility categories, hours of service across different types) and the survey data IIDC collects (developmental ages at entry/exit, skill gains, family outcomes). Specifically, we were able to answer the two questions by looking at differences among the groups of children in terms of:

1. Early intervention services received (number of months of services, hours of services, age at entry and age at exit);
2. Child outcomes experienced (developmental status, functional skill acquisition, participation in common home and community routines); and
3. Family outcomes experienced (parenting and child development, advocacy, community supports).

The Results and Discussion sections of this report are organized by the two primary evaluation questions, and further organized into three subsections reflecting these three areas of possible differences.

Data Collection and Data Analysis Methodologies

Data is collected on children and families *entering* First Steps from three sources: 1) at intake from portions of the Combined Enrollment Form, 2) during the initial evaluation through the Family Interview, and 3) at the initial IFSP meeting with portions of the completed IFSP. Intake Coordinators are asked to assemble and send documents from these three sources to the IIDC for data entry. Data is also collected on children and families *exiting* First Steps. Service Coordinators are asked to conduct an Exit Interview with the family, and include developmental data from the other members of the team. The forms that are used to collect information from entering and exiting children and families are available on the First Steps web site:

http://www.state.in.us/fssa/first_step/outcomeseval.html. Over the past 20 months, the IIDC has collected demographic, developmental, and family survey data on over 15,500 entering and exiting children and their families, and have produced and submitted two evaluation reports to the Part C Lead Agency, Bureau of Child Development (November 2003 and April 2004).

For this report, the IIDC relied on the above survey data and the state's electronic data it collects on all children and families receiving First Steps services. The state collects extensive data on all children and families receiving early intervention services as part of its enrollment and billing system, all referenced by a unique identification number. This data includes information on: date of birth, household makeup, gender, ethnicity, eligibility status, date of intake, date of first IFSP, date services were terminated, service authorizations, hours of service received (across the major types of services authorized under Part C), and location in which services were provided (in number of hours). As part of the IIDC's First Steps Statewide Evaluation Project, survey data are collected from all entering and exiting families (through interviews with service coordinators) on

a number of variables: assessed/estimated developmental ages, simple checklist of functional skills, membership/participation in household and community routines, family knowledge and involvement, and family resources.

Working with the IIDC statistician, electronic data from the state and survey databases were gathered and imported into SPSS for statistical analyses. Data were gathered from children and families who exited First Steps between April 1, 2003 and March 31, 2004, and who had received services for a minimum of six months. A combination of descriptive and statistical tests were conducted, including ANOVA and Sheffe' tests for comparing differences among means.

During the one-year period beginning April 1, 2003, a total of 6075 children and families exited Indiana's First Steps Early Intervention System. From this overall group, analyses were conducted on two major subgroups:

1. Differences among groups of children (eligibility status, age at entry) in terms of the early intervention services received were conducted on children and families who had been in the system for a minimum of 6 months. This reflected long-standing decision made by the state Bureau of Child Development and IIDC. A total of 4739 children and families for whom we had state demographic data (78% of the total exiting population) were included in this sample.
2. Differences among groups of children in terms of Child and Family Outcomes were conducted on children and families who had been in the system for a minimum of six months *and* for whom *complete* Exit Family Survey data was collected. A total 1860 children and families (30.6% of the total exiting population) were included in this sample.

Results

Question 1: What differences exist among children based upon their eligibility status?

In Indiana, children are eligible for early intervention services based upon a number of different criteria:

- A diagnosed physical or mental condition that has a high probability of resulting in developmental delay
- A documented delay of 20% in one developmental area or
- A documented delay of 15% in two or more developmental areas
- A biological risk factor that has a high probability of leading to a developmental delay

In Indiana, biological risk factors include: limited prenatal care, maternal prenatal substance abuse, severe prenatal complications, severe perinatal complications, asphyxia, very low birth weight, small for gestational age, or severe postnatal complications.

Table 2 on the following page presents the frequency count for each of the major eligibility categories for the 4739 exiting children in our sample. This count is a duplicated count as there are children with both a medical condition or biological risk factor *and* a documented delay. For this report, comparative analyses focused on four groups of children: children with diagnosed physical and/or mental conditions (N=620), children with 15% delay in 2 or more areas

Table 2
Frequency of Eligibility Categories in First Steps

ELIGIBILITY CATEGORY	FREQUENCY
Diagnosed Physical/Mental Condition	652
Documented Delay: 15% in 2+ areas	1235
Documented Delay: 20% in 1 area	2854
Risk: Limited prenatal care	8
Risk: Maternal prenatal substance abuse	34
Risk: Severe prenatal complications	41
Risk: Severe perinatal complications	65
Risk: Asphyxia	5
Risk: Very low birth weight	112
Risk: Small for gestational age	11
Risk: Severe postnatal complications	69
Unknown	494

(N=1029), children with a 20% delay in one area (N=2315), and children identified with one or more biological risk factors present (N=281). Eligibility data was missing for 494 children.

1.1 Differences in Early Intervention Services

Analyses were conducted to determine if there were any differences among the four different eligibility groups in terms of the type, amount, and location of early intervention services received. ANOVA and Sheffe' post hoc comparison tests were conducted to identify statistically significant differences among the four groups for the following dependent variables:

1. child's age at entry
2. child's age at exit
3. number of months in the First Steps program
4. hours of early intervention services
5. location early intervention services were received

Table 3 presents the average age at entry, number of months of service, and age at exit for each of the four eligibility groups: Diagnosed physical/mental condition; Documented Delay 15% in 2 or more areas; Documented Delay 20% in 1 area; At risk. A one-way analysis of variance revealed differences among the eligibility groups for each of the following three dependent variables: Age at Entry, $F(3, 4241)=502.65 p<.01$; Age at Exit, $F(3, 4241)=124.01 p<.01$; and Months Served, $F(3, 4241)=169.68 p<.01$. *Post hoc* comparisons using the Sheffe test revealed the following significant ($p<.05$) differences:

1. For *Age at Entry*, each of the pair wise comparisons among the four eligibility groups was significant: children who are at risk enter First Steps at a significantly younger age (4.6 months) than children with diagnosed physical/mental conditions (9.7 months); who in turn enter First Steps at a significantly younger age on the average than children with a 15% delay in 2 or more areas (17.3 months); who in turn enter First Steps at significantly younger age on the average than children with a 20% delay in one area (20.1 months).

2. For *Age at Exit*, each of the pair wise comparisons among the four eligibility groups was significant except for one: there were no significant differences between children in the two developmental delay groups.
3. For *Months of Service* received in First Steps, each of the pair wise comparisons among the four eligibility conditions was significant except for one comparison: there were no differences between the group of children with diagnosed physical/mental condition and the group of children who are at risk.

Table 3
Mean Age at Entry, Number of Months in First Steps, and Mean Age at Exit for Children With Different Eligibility Criteria

	Eligibility Criteria			
	Diagnosed physical/mental condition	Documented Delay: 15% in 2 or more areas	Documented Delay: 20% in 1 area	At Risk
N	620	1029	2315	281
Age at Entry	9.7	17.3	20.1	4.6
Age at Exit	28.3	33.2	32.4	23.7
Months Served	18.6	15.9	12.3	19.1

Children with biological risk factors generally entered First Steps earlier than children in the three other eligibility groups did. This is most likely because most risk factors are easily identified at birth, with children in this group quickly referred to the First Steps system. This would also explain why children in the physical/mental conditions group received services earlier than the two developmental delay groups—children in this group presented conditions that are more easily identified at earlier ages. Children, on the average, received anywhere from 12 months through 19 months of services in First Steps, with children in the biological risk and physical/mental conditions groups receiving significantly more services. Children in the at risk group exited First Steps at significantly younger ages because they generally no longer needed First Steps services.

Table 4 presents information on the number of hours of services received across the four eligibility groups. Information is presented on the four major types of services provided in First Steps, and includes two figures: the average number of hours of services by month, and the average total number of hours received while in First Steps (in parentheses). Initial analyses had examined only the total number of hours received in First Steps; however, it was quickly discovered that this data is confounded by differences in the number of months children in each of the eligibility groups received First Steps services. The longer children are in the program (e.g., 19 months on the average for children who are risk vs. 12 months for children with a Documented Delay of 20% in 1 area), the more likely that they will receive higher amounts of service. Statistical analyses focused on differences among the four eligibility groups based upon the average number of hours of service per month.

Table 4				
Mean Number of Hours per Month of Services Received, and Mean Number of Total Hours of Services (in parentheses) Received by Children in Four Eligibility Groups				
Type of Service	Eligibility Criteria			At Risk
	Diagnosed physical/mental condition	Documented Delay: 15% in 2 or more areas	Documented Delay: 20% in 1 area	
N	620	1029	2315	281
Developmental Therapy	1.5 (29.4)	2.4 (36.9)	1.1 (12.3)	1.9 (34.0)
Occupational Therapy	1.5 (32.4)	1.4 (24.0)	.5 (6.8)	1.3 (27.0)
Physical Therapy	2.2 (42.2)	1.4 (24.7)	.7 (9.4)	1.8 (33.3)
Speech Therapy	1.8 (33.2)	2.5 (37.9)	3.1 (36.0)	.6 (14.8)
Total Hours Across the Four Types of Services	6.6 (137.1)	7.5 (123.4)	5.3 (64.4)	5.3 (109.0)

A one-way analysis of variance revealed significant differences among the four types of services: Developmental Therapy, $F(3, 4131)=59.93$ $p<.01$; Occupational Therapy, $F(3, 4131)=67.61$ $p<.01$; Physical Therapy, $F(3, 4131)=64.79$ $p<.01$; and Speech Therapy, $F(3, 4131)=51.85$ $p<.01$. *Post hoc* comparisons using the Sheffe test revealed the following significant ($p<.05$) differences:

1. Children with a Documented Delay of 20% in 1 area received significantly less Developmental Therapy, Occupational Therapy and Physical Therapy than children in the other eligibility groups; but, received significantly more Speech Therapy.
2. Children with a Documented Delay of 15% in 2 or more areas received significantly more Developmental Therapy than any other eligibility group; and, generally received more services, on the average than children who are at risk or with a Documented Delay of 20% in one area.
3. Children with a Diagnosed physical/mental condition received significantly more Physical Therapy than children in the two developmental delay groups; and received more hours of services per month, on the average, than children who are At Risk

With the exception of physical therapy services, there were no other differences in the amount of services received by children with diagnosed medical conditions or who are at risk. Children with a Documented Delay of 20% primarily received speech therapy services, receiving significantly more speech services than the other three eligibility groups. Additional analyses (not reported here) suggest that many of the children in this group are experiencing delays in the area of Communication only.

Table 5 presents similar information on the number of hours of services received by location across the four eligibility groups. Information is presented on the six different locations in which early intervention services can be provided; and includes the mean number of hours of services per month by location. Overwhelmingly, the location of choice among all four eligibility groups is the child's home. While one-way analysis of variance revealed significant differences among eligibility groups in the hours of service in Family Day Cares, $F(3, 4143)=4.60\ p<.01$; Home, $F(3, 4143)=15.15\ p<.01$; and Nursery School, $F(3, 4143)=4.81\ p<.01$; the average number of hours of service per month in each of these three locations were general quite small and did not reveal any differences of significance among the four eligibility groups.

Table 5
Mean Number of Hours of Services Per Month Received by Location for Children Entering First Steps With Different Eligibility Criteria

Location of Service	Eligibility Criteria			At Risk
	Diagnosed physical/mental condition	Documented Delay: 15% in 2 or more areas	Documented Delay: 20% in 1 area	
N	251	367	946	105
Early intervention class	0.1	0.2	0.1	0.1
Family Day Care	0.1	0.1	0.1	0.1
Home	2.7	2.9	2.2	2.2
Hospital	0.00	0.00	0.00	0.00
Nursery	0.1	0.2	0.1	0.1
Outpatient	0.2	0.1	0.1	0.2

1.2 Differences in Child Outcomes

Analyses were conducted to determine if there were any differences among the four eligibility groups in terms of major child outcomes. As described earlier in the Data Collection section, outcome data were collected from families during exit interviews. ANOVA and Sheffe' post hoc comparison tests were conducted to identify statistically significant differences among the four groups for the following dependent variables:

1. number of functional skills demonstrated,
2. number of common routines performed independently,
3. number of community routines in which the child participates,
4. estimated developmental age upon exit, and
5. reasons for exiting the First Steps program (and need for later services).

Table 6 on the following page presents the mean scores for three child outcome measures: number of functional skills present, the number of common routines performed independently, and the number of community routines in which the child participates. A one-way analysis of variance revealed no significant differences in the number of community routines in which children

in different eligibility groups were able to participate. Significant differences were found in both mean number of skills $F(3, 1665)=31.83$ $p<.01$ and mean number of routines $F(3, 1665)=24.21$

Table 6
Mean Scores in Child Outcome Measures for Children With Different Eligibility Criteria

Child Outcome	Eligibility Criteria			At Risk
	Diagnosed physical/mental condition	Documented Delay: 15% in 2 or more areas	Documented Delay: 20% in 1 area	
N	251	367	946	105
Mean number of skills (total possible = 41)	28.5	30.9	33.4	29.6
Mean number of routines (total possible =10)	4.0	4.8	5.4	3.7
Mean number of community routines (total possible=13)	5.5	5.6	5.9	5.7

$p<.01$ achieved at exit by eligibility criteria. There were no significant differences found among the four eligibility groups in the mean number of community routines in which they participate. *Post hoc* comparisons using the Sheffe test revealed the following significant ($p<.05$) pair wise comparisons:

1. Children with Documented Delay of 20% in 1 area demonstrated significantly higher mean number of skills than all other groups.
2. Children with a Documented Delay of 15% in 2 or more areas demonstrated significantly higher mean number of skills than children with a Diagnosed physical/mental condition.
3. Children who are At Risk demonstrated significantly fewer routines than those with Documented 15% Delay in 2 or more areas, and those with Documented 20% Delay in 1 area.

While children in the two developmental delay groups appear to demonstrate a higher number of functional skills and independent routines than the other two groups. One likely explanation may be due to differences in chronological age at exit. Children in the two developmental delay groups generally exit First Steps at older ages than the other two groups; older children tend to demonstrate more skills and routines than younger children do. Additional analyses in the future are needed to determine if age at exit is a factor in the differences found here among the eligibility groups.

The fourth child outcome examined was children's estimated developmental age upon exit in five main developmental areas. **Table 7** presents the mean developmental ages (in months) for children in the four eligibility groups in the areas of Adaptive, Cognitive, Communication,

Physical, and Social-Emotional development. An analysis of variance indicated that there were significant differences among the eligibility groups in all five developmental areas: Adaptive/self-help $F(3, 1665)=31.48 p<.0$; Cognitive $F(3, 1665)=23.76 p<.01$; Communication $F(3, 1665)=21.24 p<.01$; Physical Development $F(3, 1665)=28.31 p<.01$; and Social/emotional $F(3, 1665)=20.15 p<.01$. *Post hoc* analysis using the Sheffe' test revealed the following significant ($p<.05$) differences: In the all developmental areas, children in the two developmental delay groups had significantly higher estimated developmental ages at exit than children with either Diagnosed physical/mental condition or children in the At Risk eligibility category.

Table 7
Mean Scores in Child Outcome Measures for Children With Different Eligibility Criteria

Child Outcome: Mean Estimated Developmental Age at Exit	Eligibility Criteria			
	Diagnosed physical/mental condition	Documented Delay: 15% in 2 or more areas	Documented Delay: 20% in 1 area	At Risk
N	251	367	946	105
Adaptive/ Self Help	19.2	23.6	25.8	19.3
Cognitive	20.1	24.2	25.6	19.5
Communication	17.7	22.2	23.1	18.7
Physical Development	20.3	25.2	26.1	19.3
Social/ Emotional	20.5	24.0	25.4	19.3

As with the previous analyses, although statistical differences were identified between eligibility groups, it appears that the differences found in the mean developmental ages may also be due in part to the children's age at exit. Further elaboration of these factors is found in the Discussion section.

A fifth child outcome examined in this study was the reason for exiting First Steps. During the exit interview, families were asked why they were exiting the First Steps system, and had three choices: their child no longer needed First Steps, they were wanting to receive services elsewhere, or their child had turned three years of age and was required to exit. **Table 8** presents this data. A Chi Square analyses was conducted and significant differences were found among the four eligibility conditions and their reasons for exiting, $X^2(6, N = 1578) = 59.995, p<.01$. It appears that children who are at risk exit First Steps because they no longer need services more frequently than the other three groups; and, that they exit because they have aged out less frequently. It also appears that among the groups, children with a documented delay of 15% in 2 or more areas tend to exit First Steps most frequently because they have turned three. It appears that a sizeable portion of the children who are At Risk (65%) exit First Steps no longer needing serv-

ices. Children in the other three groups tend to stay in the First Steps system much longer (until they turn three years of age), and present the need for continued specialized services.

Table 8
Transition Choices for Children With Different Eligibility Criteria

Reason for Exiting First Steps	Diagnosed physical/mental condition	Eligibility Criteria		At Risk
		Documented Delay: 15% in 2 or more areas	Documented Delay: 20% in 1 area	
N	251	367	946	105
No longer needed First Steps	90 (37.8%)	91 (26.1%)	341 (38.3%)	66 (65.3%)
Seeking services elsewhere	7 (2.9%)	6 (1.7%)	17 (1.9%)	4 (4.0%)
Child is three	141 (59.2%)	252 (72.2%)	532 (59.8%)	31 (30.7%)

1.3 Differences in Family Outcomes

Analyses were conducted to determine if there were any differences among the four eligibility groups in terms of major family outcomes. As described earlier in the Data Collection section, outcome data were collected from families during exit interviews. ANOVA and Sheffe' post hoc comparison tests were conducted to identify statistically significant differences among the four groups for the following dependent variables:

1. advocating by exercising their rights in requesting and choosing goals, services, and supports (4 survey questions);
2. understanding their child's developmental needs and how to support them (13 survey questions);
3. knowing about resources to help them help their child and family (4 survey questions);
4. connecting to other families, associations, and organizations for emotional support (5 survey questions); and
5. participating as members of the early intervention team and carrying out recommendations that help them to help their child (6 survey questions).

Table 9 presents the mean scores for the above categories. An analysis of variance conducted for each of the five family outcome measures revealed no significant differences among any of the eligibility groups.

Further analyses were done on the family outcomes that measure how well families know and understand topics surrounding their child and family's health, safety and nutrition. No statistically significant differences were found based on eligibility criteria for these family outcomes.

Table 9
Mean Scores in Family Outcome Measures for Children With Different Eligibility Criteria

Family Outcome	Eligibility Criteria			At Risk
	Diagnosed physical/mental condition	Documented Delay: 15% in 2 or more areas	Documented Delay: 20% in 1 area	
N	251	367	946	105
Advocate	3.9	3.8	3.9	3.8
Develop	11.2	10.5	11.3	11.1
Resources	3.7	3.7	3.7	3.7
Supports	3.7	3.7	3.7	3.4
Teaming	5.6	5.7	5.7	5.8

These findings appear to indicate that most all families served by First Steps, accomplished the measured Family Outcomes, regardless of differences in eligibility criteria.

Question 2: What differences exist among children based upon their age at entry into First Steps?

In Indiana, as most other states, children are eligible for early intervention services from birth to three years of age. For the 4739 children who exited First Steps during the one year period beginning April 1, 2003, 4622 children were included in these analyses (for whom entry age data was present). Children were sorted into three age groups based upon their age at entry: birth to 12 months (N=1873), 13 to 24 months (N=1479), and 25 to 36 months (N=1270). Analyses were conducted to determine if there were any differences among the age groups for many of the same dependent variables (services, child outcomes, and family outcomes).

2.1 Differences in Early Intervention Services

Analyses were conducted to determine if there were any differences among the three different age groups in terms of the eligibility, type, amount, and location of early intervention services received. ANOVA and Sheffe' post hoc comparison tests were conducted to identify statistically significant differences among the three age groups for the following dependent variables:

1. number of months in the First Steps program
2. hours of early intervention services
3. location in which early intervention services were receive

Table 10 presents the average number of months of service and the children's average age (in months) at exit. As can be seen, and as one might expect, there were significant differences among the three age groups in relation to the number of months of First Steps services received, $F(2, 4736)=696.58, p<.01$; and the children's age at exit $F(2,4736) = 1092.44, p < .01$. *Post hoc* comparisons using the Sheffe test revealed the following significant differences ($p<.05$) among the three age groups:

1. Children who enter the program earlier receive more months of services than children who enter when they are older do.
2. However, the earlier children enter First Steps, the earlier they exit, with significant differences found among all three age groups on age at exit.

Table 10				
Mean Number of Months in First Steps for Children Entering at Different Ages				
Type of Service	Age at Entry			
	Birth-12 mos.	13-24 mos.	25+ mos.	All Children
N	1873	1479	1270	4622
Months Served	19.5	14.3	9.6	14.5
Age at Exit	25.0	33.6	37.1	31.1

While children who enter First Steps earlier do receive more months of services, the majority of these children exited First Steps before they turned three years of age. In looking at the data presented in Table 3, one would hypothesize that the majority of children in the initial age group are children who are At Risk or children with diagnosed medical conditions. Many of these children were found to exit the First Steps system close to their second birthday.

Table 11 presents information on the number of hours of services received across the three age groups. Information is presented on the four major types of services provided in First Steps, and includes two figures: the average number of hours of services by month, and the average total number of hours received while in First Steps (in parentheses). Initial analyses had examined only the total number of hours received in First Steps; however, it was quickly discovered that this data is confounded by differences in the number of months children in each of the age groups received First Steps services (see Table 10). Statistical analyses focused on differences among the three age groups based upon the average number of hours of service per month. An analysis of variance revealed significant differences among the three age groups for: Occupational Therapy: $F(2, 4619) = 61.00 p<.01$; Physical Therapy: $F(2, 4619) = 264.85 p<.01$; and Speech Therapy: $F(2, 4619) = 274.62 p<.01$. Significant differences were not found among the three age groups for Developmental Therapy.

Post hoc comparisons using the Sheffe test revealed the following significant ($p<.05$) differences among the three age groups:

1. Children who entered First Steps within their first year received more Occupational Therapy and Physical Therapy per month than those who entered in their second year,
2. Children who entered First Steps in their second year received more Occupational Therapy and Physical Therapy per month than those who entered in their third year.
3. Conversely, children who entered in their first year received less Speech Therapy per month than those who entered in their second year, who received less Speech Therapy per month than those who entered in their third year.

These findings tend to dovetail with the findings presented in Table 4 above. It is likely that many of the children who enter First Steps earlier in life present noticeable delays and diagnosed medical conditions that require traditional motor therapy services. Children who enter First Steps later in life are identified as experiencing delays in the area of Communication, and receive extensive speech therapy services. It is unclear why there were no differences among the three age groups in terms of the amount of developmental therapy services received. This finding will warrant future investigation.

Table 11
Mean Number of Hours per Month of Services Received, and
Mean Number of Total Hours of Services (in parentheses) Re-
ceived by Children Entering at Different Ages

Type of Service	Entry Age Groups		
	Birth-12 mos.	13-24 mos.	25+ mos.
N	1873	1479	1270
Developmental Therapy	1.5 (31.1)	1.5 (20.9)	1.6 (13.9)
Occupational Therapy	1.5 (34.1)	.9 (13.1)	.7 (5.8)
Physical Therapy	2.3 (46.4)	.8 (12.8)	.3 (2.8)
Speech Therapy	1.1 (27.5)	3.3 (46.6)	3.8 (34.7)

Table 12 presents the mean number of hours of service per month by location for children entering First Steps at Different Ages. A one-way analysis of variance revealed significant differences between entry age groups only in the amount of services per month received in the home $F(2, 4633)=15.30, p<.01$. *Post hoc* comparisons using the Sheffe test revealed significant ($p<.05$) differences in the average hours of service per month between the group of children who enter First Steps within their first year, and those who enter after age two. Children who enter before their first birthday receive a greater number of hours of service per month at home than do the children who enter after their second birthday. Visual examination of these data suggest that the differences reflect differences in the overall amount of services received among the three age groups, and do not suggest differences in where services are generally provided. Future research may want to examine differences in the *proportion* of where services are provided.

Table 12
Mean Number of Hours of Services Per Month Received by
Location for Children Entering First Steps at Different Ages

Location of Service	Entry Age Groups		
	Birth-12 mos.	13-24 mos.	25+ mos.
N	1873	1479	1270
Early intervention class	0.2	0.1	0.1
Family Day Care	0.1	0.1	0.1
Home	2.9	2.6	2.3
Hospital	0.0	0.0	0.0
Nursery	0.1	0.1	0.1
Outpatient	0.1	0.1	0.2

2.2 Differences in Child Outcomes

Analyses were conducted to determine if there were any differences among the three different age groups in terms of major child outcomes. As described earlier in the Data Collection section, outcome data were collected from families during exit interviews. ANOVA and Sheffe' post hoc comparison tests were conducted to identify statistically significant differences among the four groups for the following dependent variables:

1. number of functional skills demonstrated,
2. number of common routines performed independently,
3. number of community routines in which the child participates,
4. estimated developmental age upon exit, and
5. reasons for exiting the First Steps program (and need for later services).

Analyses were conducted for children and families for whom complete exit surveys were returned, and who had been enrolled in First Steps for at least six months (N=1860): Birth-12 months (N = 765), 13-24 months (N = 590), and 25+months (N = 505).

Table 13 presents mean scores in child outcome measures for children entering First Steps at Different Ages. It must be noted that not all children exit at three years of age. An analysis of variance revealed significant differences between age groups in both the mean number of skills $F(2,1857) = 81.75, p < .01$; routines $F(2,1857) = 78.12, p < .01$; and community routines $F(2,1857) = 7.01, p < .01$. *Post hoc* comparisons using the Sheffe test revealed the following significant ($p < .05$) differences:

1. Children who entered First Steps within their first year demonstrated significantly fewer skills upon exit, on the average, than children who entered later did.

2. Significant differences were found between all three age groups in the mean number of common routines independently carried out, with children who enter the system earlier demonstrating fewer routines than children who enter later do.
3. Children who entered First Steps between birth and 12 months participated in significantly fewer community routines, on the average, than children who entered between 13 and 24 months; although the differences are not meaningfully significant.

Table 13
Mean Scores in Child Outcome Measures for Children Entering First Steps at Different Ages

Outcome	Entry Age Groups		
	Birth-12 mos.	13-24 mos.	25+ mos.
N	1873	1479	1270
Mean number of skills (total possible = 40)	28.8	33.7	33.6
Mean number of routines (total possible = 10)	3.9	5.3	5.7
Mean number of community routines (total possible=13)	5.6	6.1	5.8

The differences reported in Table 13 among the three age groups are likely due to their differences in chronological age at exit. Children who enter First Steps earlier tend to exit at younger ages. Children who are younger, chronologically, tend to demonstrate fewer skills and routines independently. Future analyses to tease apart this additional variable are needed to accurately determine if there are any differences due solely to the child's age at entry.

Table 14 presents the estimated developmental ages at exit in the five areas measured by First Steps across the three age groups. An analysis of variance revealed significant differences among the three age groups in all areas of development: Adaptive/self-help skills $F(2, 1865)=148.66 p<.01$; Cognitive skills $F(2, 1865)=140.13 p<.01$; Communication skills $F(2, 1865)=96.60 p<.01$; Physical development $F(2, 1865)=189.11 p<.01$; and Social/emotional skills $F(2, 1865)=116.59 p<.01$.

Post hoc comparisons using the Sheffe test revealed that children who entered within their first year had significantly ($p<.05$) lower scores in all areas than those who entered later. No other group differences were found. It is hypothesized that since the children who enter early are also those who exit early, these scores reflect children of a younger age than those of the other two groups.

Table 14
Mean Estimated Developmental Age at Exit for Children
Entering First Steps at Different Ages

Child Outcome: Mean Estimated Developmental Age at Exit	Entry Age Groups		
	Birth-12 mos.	13-24 mos.	25+ mos.
N	1873	1479	1270
Adaptive/ Self Help	18.5	26.5	27.5
Cognitive	19.0	26.7	27.6
Communication	17.7	24.7	23.7
Physical Development	18.7	27.3	28.7
Social/Emotional	19.3	26.4	27.2

A fifth child outcome reported in this study was the reason for exiting First Steps. During the exit interview, the families were asked why they were exiting the First Steps system, and had three choices: their child no longer needed First Steps, they were wanting to receive services elsewhere, or their child had turned three years of age and was required to exit. **Table 15** presents this data. A Chi Square analyses was conducted and significant differences were found among the four eligibility conditions and their reasons for exiting, $X^2(4, N = 1768) = 254.40, p < .01$.

Table 15
Transition Choices for Children from Different Age Groups

Reason for Exiting First Steps	Entry Age Groups		
	Birth-12 mos.	13 – 24 mos.	25+ mos.
N	1873	1479	1270
No longer needed First Steps	384 (53.3%)	232 (40.9%)	48 (10%)
Seeking services elsewhere	23 (3.2%)	12 (2.1%)	4 (.8%)
Child is three	314 (43.6%)	323 (57.0%)	428 (89.2%)

It appears that, as a whole, very few families seek services elsewhere, which is true across all age groups. In addition, children who enter the system late (third year), tend to exit because they have turned three. The majority of children who enter early (first 12 months), tend to exit no longer needing First Steps services.

2.3 Differences in Family Outcomes

Analyses were conducted to determine if there were any differences among the three age groups in terms of major family outcomes. As described earlier in the Data Collection section, outcome data were collected from families during exit interviews. ANOVA and Sheffe' post hoc comparison tests were conducted to identify statistically significant differences among the three groups for the following dependent variables:

1. understanding their child's developmental needs and how to support them (13 survey questions);
2. advocating by exercising their rights in requesting and choosing goals, services, and supports (4 survey questions);
3. knowing about resources to help them help their child and family (4 survey questions);
4. connecting to other families, associations, and organizations for emotional support (5 survey questions); and
5. participating as members of the early intervention team and carrying out recommendations that help them to help their child (6 survey questions).

Table 16 presents the mean score (number of survey items check 'Yes') for each of the three age groups. An analysis of variance revealed no significant differences between groups at the .05 levels. It appears that most families in First Steps accomplish all targeted Family Outcomes.

Table 16			
Mean Scores in Family Outcome Measures for Children Entering First Steps at Different Ages			
Family Outcome	Entry Age Groups		
	Birth-12 mos.	13-24 mos.	25+ mos.
N	1873	1479	1270
Advocate	3.8	3.9	3.9
Develop	11.0	11.1	11.2
Resources	3.7	3.8	3.7
Supports	3.7	3.7	3.7
Teaming	5.7	5.8	5.7

Discussion

This study attempted to answer two questions of interest to Indiana policy makers: Are there differences in the services and outcomes experienced among children based upon their eligibility status and based upon their age at entry into First Steps. Based on our findings, we found several differences in terms of the early intervention services received and child outcomes. No differences were found among any of the groups in the area of family outcomes.

Differences among children based upon their eligibility status

Analyses were conducted to identify significant differences among First Steps children grouped under one of four eligibility categories:

1. Children with a *diagnosed physical and/or mental condition*
2. Children with a *biological risk factor that has a high probability of leading to a developmental delay*;
3. Children with a *documented delay of 15% in 2 or more developmental areas*; and
4. Children with a *documented delay of 20% or more in 1 developmental area*.

Our analyses revealed several significant differences among the four eligibility groups, although many of these differences are not surprising.

Differences in Early Intervention Services

Children with biological risk factors are significantly different from children in the three other eligibility categories in many ways. Because the presence of these risk factors can be easily identified at birth, children in this group tend to be identified earliest, and begin receiving services by 5 months of age on the average. Because they are identified earlier in life, children with biological risk factors receive more months of services (19 months) than do children with developmental delays. This happens, in spite of the fact that children at risk tend to exit First Steps at a much earlier age (24 months). In addition, children in this eligibility group tend to receive fewer hours of developmental services per month, particularly speech therapy services.

Children with diagnosed physical/mental conditions were more like children with biological risk factors than children in either of the two developmental delay groups. Children in this eligibility group were also identified and began receiving services earlier in life than children in the developmental delay groups (10 months), and received services longer than children in those same two groups (19 months). Children in this group generally exited First Steps before their third birthday, but the reasons for this are unclear and warrant further investigation. In addition, children in this group tended to receive more services than children in the at risk group, and more physical therapy services than either of the two developmental delay groups.

Children in the two documented developmental delay groups were not significantly different from each other in terms of their age at entry or exit, or in terms of their months of services. They tended to be identified later than children who are at risk or have diagnosed medical conditions; and they tended to exit First Steps later, too. Children in the 15% Delay in 2 or more areas group tended to receive significantly more developmental therapy services than the other three eligibility groups; and, more services overall than children who are at risk or children in the 20%

Delay group. Children in the 20% Delay group tended to receive fewer therapy services than children in the other three groups except for one area—they received significantly more speech therapy services than all other eligibility groups. Additional analyses suggest that many of these children are the *speech and language only* children, with delays primarily in the area of Communication.

From these analyses, it appears that children in the four eligibility groups do receive different services from one another. One concern, however, is the delayed entry of children with developmental delays. Many of these children are not identified until their second birthday. As a result, many children with identified delays fail to receive services earlier in life, generally wind up staying in the program until three years of age, and exit the program still needing some specialized services.

Differences in Child Outcomes

While there were statistical differences among the child outcome variables for the four eligibility groups, it is likely that these differences are confounded by children's age at exit. For example, children in the two developmental delay groups demonstrated more developmental skills upon exit (significantly so for children in the 20% delay group). However, children in these two groups generally exited the system at significantly older ages (e.g., 33 and 32 months for the 15% and 20% delay groups, respectively) as compared with children with physical/mental (28.3 months) or at risk conditions (23.7 months). This would also account for children in the at risk group performing fewer routines independently than the other three groups.

In comparing the groups' mean estimated development ages, again children in the two developmental delay groups had significantly higher estimated developmental ages at exit than children in the other two groups. However, factoring in the children's differing chronological ages upon exit, the data looks different. For example, children in the at risk group exited First Steps at 24 months (on the average), and functioned developmentally around 19+ months; a delay of approximately 5 months. For children with a 15% delay, the difference between chronological and developmental ages grew to a range of 8-11 months. Children with diagnosed physical/mental conditions demonstrated an average delay of 8-11 months. Based upon this developmental data (which are based upon estimates from the team), and the presence of disabilities typically associated with children in this eligibility group, one would expect that the majority of children would exit closer to their third birthday than our analyses indicated. This is especially true when factoring in data from the Exit Survey where families indicate the reasons for exiting First Steps. A significant proportion of families in this eligibility group (59%) indicated they were exiting because their children turned three years of age. Additional investigations to understand these findings are warranted.

Reasons for exiting First Steps did provide a positive note for demonstrating the impact of First Steps on children. Children who are at risk generally exit the system close to their second birthday, with the majority leaving because they no longer need services (65%). Smaller percentages of children in the other three eligibility groups exited First Steps for the same reason, ranging from 38% for children with diagnosed medical conditions to 26% for children with Documented Delays of 15% or more in two or more areas. The majority of children in the two developmental

delay and diagnosed medical conditions groups tend to exit First Steps continuing to need specialized services

Differences in Family Outcomes

As reported above, there were no significant differences among the four groups for the various family outcome measures. The First Steps system has generally excelled at insuring all families know their rights, understand their roles as parents and team members, and access resources and supports as needed.

Differences among children based upon their age at entry into First Steps

Analyses were conducted to identify significant differences among First Steps children grouped under one of three age groups:

1. Children who entered First Steps in their first year of life (birth to 12 months)
2. Children who entered First Steps in their second year of life (13 to 24 months)
3. Children who entered First Steps in their third year of life (25 to 36 months).

Again, while our analyses revealed significant differences among the three age groups, although many of the differences were not surprising.

Differences in Early Intervention Services

As expected, children who begin services earlier have a greater chance of receiving services for many more months as compared with children who start later. This was true for our data, even though children who began in their first year also exited significantly earlier than the other two groups. While it would be nice to make a case for “the earlier the better,” this conclusion would be confounded by eligibility categories, with a disproportionate number of children in the at risk group in this age group (a population of children that typically do not have the same level of needs of children in the other three groups). Future analyses are needed to tease apart the effects of these two variables.

In looking at the number of hours of services (see Table 11), it is probably not surprising that there were no significant differences among the three groups in the average number of hours of DT services per month received. Providing general developmental services is arguably important for children regardless of their age at entry or their eligibility category. The significant differences found among the age groups in OT and PT services are, again, probably not surprising considering that these services are typically provided to children with disabilities that are easily identified in children’s first years of life. For speech therapy, there were significant differences among all three age groups, with a trend that indicates that as the child’s age at entry increases, so does the amount of ST received. Again, as noted earlier, it is likely that many of the children identified during their second and third years are experiencing delays in the area of communication.

Differences in Child Outcomes

Significant differences were found for each of the child outcome measures used in this study. Children who enter First Steps in their second or third year of life, tend to exit First Steps demonstrating more developmental skills, increased numbers of functional routines, and higher estimated developmental ages across all developmental domains. Difference in the groups' average age at exit confounds this finding. Children who enter First Steps earlier tend to exit at younger ages. Children who are younger, chronologically, would not be expected to score as high on these child outcome measures as children who are older.

Children in the first age group exit First Steps, on the average, just after their second birthday. Just over half of this group (53.3%) exit because they no longer needed First Steps; yet a large percentage of this group (43.6 %) indicated that they were exiting because their child was turning 3 years of age. Children in the two older groups also differed significantly on this last measure, with just over 40% of the children in the second age group exiting because they no longer needed First Steps, as compared with a meager 10% of the third age group. Children who enter First Steps in their third year generally exit First Steps at three.

Differences in Family Outcomes

There were no reported significant differences among the three age groups on the five family outcome measures. Regardless of when families enter First Steps, providers insure that families acquire the knowledge, skills, and resources they need to parent and advocate for their child.

Conclusions and Recommendations

Listed below are the conclusions that can be made from these analyses of our state demographic and outcome data:

1. Children eligible for First Steps due to the presence of biological risk factors are generally identified and served early in life, receive general developmental (DT) services, and exit the system no longer needing specialized services.
2. Children eligible for First Steps due to the presence of physical/mental conditions are generally identified in their first year of life, received more specialized services (OT and PT—most likely due to the presence of physical disabilities and delays), and generally exit First Steps when they turn three. However, almost 40% of this group exits before their third birthday no longer needing specialized services.
3. Children with developmental delays tend to be identified much later in life (17-20 months on the average), receive fewer months of services but equal and sometimes greater amounts (hours) of services, and tend to exit First Steps when they turn three. Notable differences between the two developmental delay groups are: children in the 15% delay group are more likely to receive multiple and more intense services than the 20% delay group; while the 20% delay group tend to receive a higher amount of speech therapy.
4. Children who enter First Steps earlier tend to exit earlier, receive more months of service, and exit because they no longer need services. Differences in services and child outcomes are more likely associated with the child's eligibility condition than the child's age at entry.

Because of the analyses and conclusions made in this report, our primary recommendations concern the need for further analyses to understand some of the more interesting and/or curious findings that may have policy implications:

1. There is a need to determine why children with physical/mental conditions are not identified and served even earlier, given the assumed presence of a medical condition that exists at birth for many of these children.
2. In addition, it is important to conduct additional analyses to understand the seemingly contradictory findings concerning children with physical/mental conditions and their average age at exit paired with their most frequent reason for exiting. One would assume that many of these children may need services past their third birthday, and many of the families in this group indicated this in their survey.
3. Because children with developmental delays are identified so much later as compared with children from the other two groups, further study and/or discussions concerning the need to increase child find efforts and identification procedures are warranted.
4. These analyses have provided a foundation for further analyses to be conducted in the future, particularly in examining other demographic variables of interest (e.g., family income, ethnicity, gender).